

THE LIFE HISTORY OF A HITHERTO UNRECOGNISED LYCAENID
SPECIES: *THECLINESTHES ALBOCINCTA* (WATERHOUSE)
FROM SOUTH AUSTRALIA

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Abstract

We describe the life history of a hitherto unrecognised lycaenid species, *Theclinesstes albocincta* (Waterhouse), 1903 **stat. n.**, from South Australia. The food plant is *Adriana klotzschii* (F. Muell.) Muell.-Arg. (Euphorbiaceae).

***Theclinesstes albocincta* (Waterhouse) 1903, stat. n.**

Utica onycha var. *albocincta* Waterhouse, 1903: 242. Syntype ♂♂, Peak Downs, Queensland.

The lycaenid butterfly *Theclinesstes albocincta* (Waterhouse), which has not previously been recognised as a distinct species, has been collected at Port Gawler in South Australia. This has led to the discovery of its early stages on the coastal plant *Adriana klotzschii* at Port Gawler and, later, at Warooka, S. Aust. Common and Waterhouse (1972) in *Butterflies of Australia* (p. 397) have described these adult butterflies under *Theclinesstes onycha onycha* (Hewitson). "In western Victoria and south-eastern South Australia, males are . . . dull greyish blue, with broader dark margins and thicker tail than elsewhere . . .", when compared with the typical male butterfly of *onycha* which is lilac (or dull blue in northern Queensland) with narrow dark terminal lines, and narrow ciliate tail. They recognised the need for an intensive study of the *T. onycha-miskini* complex to clarify the status of the various forms.

The discovery of *A. klotzschii* as the larval food plant of *T. albocincta*, in contrast to *Acacia* (mainly) for *T. onycha onycha* (Hewitson) and *Cycas* and *Macrozamia* for *T. miskini* (Lucas), together with the observation that adults of *T. albocincta* have been caught flying on the same day in close proximity to the lilac adult form of *T. onycha*, has established the distinct species status of *albocincta*.

We have determined the taxonomic identity and name of *T. albocincta* as part of a taxonomic revision we are preparing of the whole genus *Theclinesstes*. This will include details of the morphology, taxonomy, nomenclature and distribution, but not a comparison of the early stages. However, in order to make the name and life history information of *albocincta* promptly available to other workers, we have recorded it here.

Larval food plant and early stages

Larval food plant. *Adriana klotzschii* (F. Muell.) Muell.-Arg. (Euphorbiaceae), a very leafy many-branched shrub which normally attains a height of up to 1.5 m. It has soft serrated leaves that are glossy

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dark green above, and light green and hairy beneath. It bears small pink flowers along slender spikes during the summer months and produces hard green gall-like fruits to 10 mm. In South Australia the plant is found on very sandy soil, particularly along the coast.

Ovum. Pale greenish or bluish white, mandarin-shaped; base flattened; slightly depressed on top. Micropylar area with small square facets, remaining surface deeply pitted with larger angular facets each with short blunt spine-like corners.

Larva. First instar white, sometimes with a few reddish lateral marks. Each segment with lateral short white primary setae, and paired long and short recurved dorsal setae, those on the metathorax pointing forwards. Prothoracic plate diamond shaped, yellowish with black edges, smooth, glossy; anal plate roughly square with black edges. Head small, dark brown, smooth, glossy. Second instar similar to first. Third and fourth instars similar to the final instar. The long dorsal setae of the first instar are gradually lost in later instars.

Mature larva (Figs 1, 2) has profile generally arched with a narrow shallow longitudinal dorsal furrow from thoracic segment (TS) 2 to abdominal segment (AS) 6; developed the strongest on the meso- and metathorax. Prothorax flattened, anteriorly rounded. Posterior four abdominal segments flattened; anal segment subtriangular, posteriorly rounded. The colour is variable with four basic colour types: (1) Pale green; a reddish purple median dorsal line lying within the dorsal furrow; thickest on TS 2-3 and AS 1, narrowing or becoming indistinct on AS 2-5, and thickening again at the posterior edge of AS 6. The line is then interrupted by the median dorsal organ and anal plate before continuing again as a very narrow line to the posterior edge. The dorsal line is edged with pale yellowish white to AS 6. An indistinct dark green broken dorsolateral to subdorsal line occurs on either side of the dorsal line. The anterior edges of these lines at each segment are offset towards the dorsal line. They are both united at the anterior edge of TS 2 and then bifurcate and come together again posteriorly at AS 9. There is a short transverse black dorsal bar across the anterior half of AS 1, nearly reaching to the dorso-lateral lines. There is a very indistinct yellowish or pinkish lateral line. (2) Pale brownish purple with dark purple median dorsal and dorso-lateral lines. The dorsal line, on TS 2-3 and AS 1 is black, and is edged yellowish white. There is a black transverse bar on AS 1 and at the posterior edge of AS 6 joining the two dorsolateral lines. A yellowish or dark purple lateral line. (3) Pink or pinkish green with reddish or purple dorsal and dorsolateral lines. The dorsal line is edged pale yellowish white. A very indistinct yellowish or pinkish lateral line. (4) Pale green with a darker green median dorsal line edged pale yellowish green. Very indistinct darker green dorsolateral lines. Occasionally with an indistinct yellowish lateral line.

Colour types (1) and (2) are the most common. Further minor colour variations occur between all four types. Head is small, light yellowish brown, smooth, glossy. Prothoracic plate small, roughly diamond-shaped, elongated longitudinally, yellowish dull, covered in very fine secondary setae, and with a long smooth hair arising from a black circular base at either lateral corner, and two black spots are located anteriorly. Anal plate



FIG. 1.

Mature larvae of *Theclinesthes albocincta* on a leaf of *Adriana klotzschii*. Dorsal view: from left to right, colour types 2, 1, 1 (at right angle to the three others), 3 and 2.

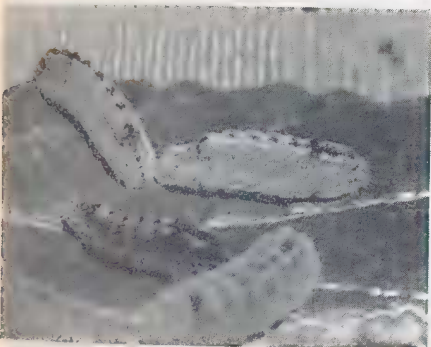


FIG. 2.

As above. Lateral view: from top to bottom, colour types 1, 1, 2 and 3. Dorsal furrow partially visible in type 3 (out of focus).

small, roughly square-shaped with very fine setae. Anterior, posterior and ventrolateral edges hairy; remaining dorsal surface covered in a dense mass of fine secondary setae. Setae are white, pink, purple and occasionally black, which give the larval colour pattern; the skin pigment is subtranslucent green or pink. Where there is an abundance of white setae it gives the larva a dull very fine speckled or mealy appearance similar to that of *Theclinesthes serpentata* (Herrich-Schäffer) (as combined recently by Eliot, 1973). Seta consists of a stellate crown set on a short base, and a much longer curved spinose shaft emanates from the centre of the crown. The crown is 5-9 rayed, usually 6-8; there appears to be basically five primary points with secondary (usually smaller) points developing between the primary points. Median dorsal and dorsolateral organs are well developed.

Pupa (Figs 3, 4). Light brown to brown, with fine dark brown to brown-black mottled markings. Thin dark brown mottled dorsal and dorsolateral lines; a dark brown patch on top of head. Smooth, with some short erect hairs on head, thorax and abdomen. Fastened by a central girdle and anal hooks.

FIG. 3.

Pupae and prepupa of *Thecllnesthes albocincta*. Dorsal view: pupae (top and left) and prepupa (right).



FIG. 4.

As above. Lateral view: pupae (two at the top) and prepupa (bottom).



Life history

The eggs are laid singly on the flowering heads and occasionally on the young fruits and leaves of the food plant. The larvae prefer to eat the flowers and flower buds when present but also hollow out the young fruits, and occasionally eat the young leaves. In captivity they readily accept young or old leaves of the food plant, eating only the upper glabrous surface. Larvae are usually attended by one or two ants of at least three species at either locality. There are two small dark types [*Polyrhachis* (*Campomyrma*) sp. and *Iridomyrmex* sp. at Port Gawler, and *Camponotus* sp. and *Notoncus ?gilberti* Forel at Warooka] and a black medium (ca. 6 mm) size species [*Rhytidoponera metallica* (Fr. Smith)] at both localities. The presence of ants on the food plant is usually indicative of eggs or larvae. The larvae feed openly during the day, their colour providing good camouflage amongst the pink flowers and green stems. There was no evidence of larval parasitism. We have not collected the pupae but they have been found more recently by Mr R. Fisher (pers. comm.) on the ground beneath the food plant attached to leaves, stones

or other debris. Pupal duration during the summer varies from 7-12 days, mainly 9-11 days, and in the autumn it is 16-20 days. There is no correlation between the larval colour and butterfly morphology or sex. From a single group of 47 butterfly emergences from Port Gawler over the period from 17 January to 6 February, 17♀ compared to 10♂ emerged before 29 January, while 7♀ compared to 13♂ emerged after 29 January. Eighty per cent of the butterflies emerged during the day between 9 a.m. and 3 p.m.

It is probable that this butterfly breeds continuously throughout the summer months as larvae collected during January were in all stages of development. No butterflies or larvae have been collected during the winter months.

Notes

Larvae and eggs were first discovered on the food plant at Port Gawler on 4 January, 1972, where they were locally very common. The food plant was growing along the foreshore as close as 20 m from the high tide mark, and was sheltered on the landward side by *Melaleuca lanceolata* Otto (known as Black Tea-tree in South Australia), a tree growing to 4 m. Male butterflies were commonly caught flying or sheltering on the leeward side of the trees and food plant or while feeding from flowers on low coastal plants.

Mature larvae have subsequently been collected from a coastal locality west of Warooka, Yorke Peninsula, towards the end of April. There were no butterflies flying. These larvae were successfully reared in Sydney on the food plant brought over from Warooka. The emergent butterflies were a darker "winter" form and tended to be larger than those reared from Port Gawler during the summer. *Adriana* sp. was also seen growing near the coast between Dongara and Geraldton in Western Australia during June to August 1972. The shrubs were not in flower and there were no signs of *Theclinesthes albocincta* larvae or eggs although there was a medium sized black ant (possibly *Rhytidoponera metallica*) present.

Acknowledgements

We thank the State Herbarium of South Australia, Adelaide, for identification of the plants, Dr R. W. Taylor, C.S.I.R.O., Division of Entomology, Canberra, for identification of the ants, and Mr R. Fisher for providing us with information on the first instar larva and pupae in nature.

References

- Common, I. F. B. and Waterhouse, D. F., 1972. *Butterflies of Australia*. 4to. Angus & Robertson, Sydney, Pp. i-xii, 1-498, illustr.
- Eliot, J. N., 1973. The higher classification of the Lycaenidae (Lepidoptera): a tentative arrangement. *Bull. Br. Mus. Nat. Hist.* (Ent.) 28(6): 373-506, pl. 1-6.
- Waterhouse, G. A., 1903. Notes on Australian Rhopalocera: Lycaenidae. Part III.— Revisional. *Proc. Linn. Soc. N.S.W.* 28(1): 132-275, pls. i-iii.